FIG.1:

(1) sound source 1

(2) signal processing circuit 2

(3) noise generator 3

(4) D/A converter 4_{FL}, 4_{FR}, 4_C, 4_{RL}, 4_{RR}, 4_{WF}, 10

(5) amplifier 5_{FL}, 5_{FR}, 5_C, 5_{RL}, 5_{RR}, 5_{WF}, 9

(6) A/D converter 10

FIG.2:

(1) noise generator 3

(2) attenuator ATF_{11}, ATF_{12} to ATF_{1j}, ATF_{k1}, ATF_{k2}, ATF_{ki}, ATG_1, ATG_2, ATG_3, ATG_4, ATG_5, ATG_k

(3) delay circuit DLY_1, DLY_2, DLY_3, DLY_4, DLY_5, DLY_k

FIG.3:

(1) frequency characteristic correcting portion 11

(2) channel-to-channel level correcting portion 12

(3) phase characteristic correcting portion 13

(4) flatness correcting portion 14

(5) system controller MPU

FIG.4:

(1) middle/high frequency band processing portion (except subwoofer) 15a

(2) low frequency band processing portion (except subwoofer) 15b

(3) subwoofer low frequency band processing portion (only subwoofer) 15c

(4) calculating portion 15d

FIG.5:

(1) logarithmic frequency (kHz)

(2) gain (dB)

(3) low frequency band

(4) middle/high frequency band

FIG.6:

(1) logarithmic frequency (kHz)

(2) power (dB)

(3) low frequency band

(4) total power of loudspeakers 6_{FL} to 6_{WF}

(5) power of loudspeakers 6_{FL} to 6_{RR}

(6) power of a loudspeaker 6_{WF}

FIG.7:

(1) front left-side loudspeaker 6_{FL}

(2) center loudspeaker 6_{C}

(3) front right-side loudspeaker 6_{FR}

(4) rear left-side loudspeaker 6_{RL}

(5) subwoofer 6_{WF}

(6) rear right-side loudspeaker 6_{RR}

FIG.8:

(1) start

(2) frequency characteristic correcting process (S10)

(3) channel-to-channel level correcting process (S20)

(4) phase characteristic correcting process (S30)

(5) flatness correcting process (S40)

(6) end

FIG.9:

(1) start

(2) initialize the attenuators (S100)

(3) measure the sound field characteristic (S104)

(4) set a target curve (S106)

(5) calculate adjusted values Fn(x, J) (S110)

(6) normalizing process (S120)

(7) calculate the attenuation factors SFxj, adjust the attenuation factors of the inter-band attenuators (S126)

(8) end

FIG.10

(1) start

(2) initialize the attenuators (S200)

(3) measure the sound field characteristic (S204)

(4) Have processes of the channels 1 to 5 been completed x=5 ? (S208)

(5) set target data (S210)

(6) calculate adjusted values of the channel-to- channel attenuators (S212)

(7) adjust the channel-to-channel attenuators (S214)

(8) return

FIG.11:

(1) start

(2) initialization (S300)

(3) measure the sound field characteristic (S304)

(4) Have processes of all channels been completed x=k ? (S308)

(5) calculate delay times (S310)

(6) calculate the average delay time (S316)

(7) adjust the delay circuits (S318)

(8) return

FIG.12:

(1) start

(2) set parameters (S400)

(3) set target data (S402)

(4) initialize the attenuator on the subwoofer channel (S404)

(5) measure the sound field characteristic (middle/high frequency band of 5 channels) (S406)

(6) measure the sound field characteristic (low frequency band) (S408)

(7) measure the sound field characteristic (only subwoofer) (S410)

(8) calculate the attenuator adjusted value on the subwoofer channel (S412)

(9) adjust the attenuator on the subwoofer channel (S414)

(10) return